



AEROSPACE MATERIAL SPECIFICATION

AMS3819™**REV. E**Issued 1987-07
Revised 2025-09

Superseding AMS3819D

(R) Cloths, Cleaning,
For Aircraft Primary and Secondary Structural Surfaces

RATIONALE

Document revised the classifications. A classification for an aircraft transparency cleaning cloth was also added, along with the associated requirements and test method. The test method for water absorption was clarified. Several other clarifications were accomplished as well.

1. SCOPE

1.1 Form

This specification covers absorbent fabric materials supplied either as dry cloth or presaturated cloth for solvent cleaning process applications.

1.2 Application

These cloths have typically been used in cleaning metallic or nonmetallic aircraft surfaces prior to processing operations that are sensitive to residual surface contamination, but usage is not limited to such applications.

1.3 Classification

Cloths covered by this specification are classified as follows:

Class 1 (CL 1)	100% cotton fiber
Class 2 (CL 2)	100% rayon fiber (e.g., viscose or other processed rayon)
Class 3 (CL 3)	Blended fibers (e.g., cotton and/or synthetic blends)
Class 4 (CL 4)	100% polyester fiber
Style 1 (ST 1)	Woven
Style 2 (ST 2)	Nonwoven
Style 3 (ST 3)	Knitted
Type 1 (TY 1)	Suitable for standard cleaning applications
Type 2 (TY 2)	Suitable for standard cleaning applications and aircraft transparency cleaning applications

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Grade A (GR A)	For use in cleaning operations where exceptionally low residual surface contamination levels are required (as defined by Table 1 limits).
Grade B (GR B)	For use in cleaning operations where low residual surface contamination levels are required (as defined by Table 1 limits).
Form 1 (FM 1)	Dry cloths
Form 2 (FM 2)	Form 1 cloths contained in a presaturated wiping system

NOTE 1: See 8.3 for classification comparisons between AMS3819D and AMS3819E.

NOTE 2: Form 1 cloths are typically available as individual wipes in flat-packs, rolls, or bulk packaging.

NOTE 3: Form 2 cloths are typically available in the following configurations:

- Perforated rolls of nonwoven cloth wipers dispensed from a canister designed to minimize solvent evaporation.
- Cloth wipers dispensed from a flexible pouch designed to reseal and minimize solvent evaporation.

1.3.1 Form 1 cloths used in Form 2 presaturated wiping systems shall contain no binders.

1.3.2 Solvents used in presaturated wiping systems shall be designated and approved as acceptable by the purchasers. The supplier shall ensure the specific solvent, cloth, and packaging used in a presaturated wiping system are compatible for the duration of shelf life.

1.3.3 If no classification of cloth is specified, a Class 1, Style 1, Type 1, Grade A, Form 1 cloth shall be the default.

1.4 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards that may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (U.S. and Canada only) or +1 724-776-4970 (Outside U.S. and Canada), www.sae.org.

AMS-P-83310 Plastic Sheet, Polycarbonate, Transparent

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D329 Standard Specification for Acetone

ASTM D740 Standard Specification for Methyl Ethyl Ketone

ASTM D1193 Standard Specification for Reagent Water

ASTM D1776 Standard Practice for Conditioning and Testing Textiles

ASTM D1836 Standard Specification for Commercial Hexanes

ASTM D2257 Standard Test Method for Extractable Matter in Textiles

ASTM D3776 Standard Test Method for Mass per Unit Area (Weight) of Fabric

ASTM E70 Standard Test Method for pH of Aqueous Solutions with the Glass Electrode

ASTM E168 Standard Practices for General Techniques of Infrared Quantitative Analysis

ASTM G120 Standard Practice for Determination of Soluble Residual Contamination by Soxhlet Extraction

2.3 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

A-A-59502 Plastic Sheet, Polycarbonate

MIL-PRF-5425 Plastic Sheet, Acrylic, Heat Resistant

MIL-PRF-8184 Plastic Sheet, Acrylic, Modified

MIL-PRF-25690 Plastic, Sheet and Formed Parts, Modified Acrylic Base, Monolithic, Crack Propagation Resistant

2.4 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.p-r-i.org.

OP 2007 QPG Operation

OP 2007 Appendix G9 Additional Requirements for the Aerospace Sealants and Associated Materials (G9) QPG

PD2000 PRI-QPL Program Requirements

PRI QPL-AMS3819 Products Qualified Under AMS3819

2.5 ANSI Publications

Copies of these documents are available online at <https://webstore.ansi.org>.

ANSI Z400.1/Z129.1 Hazardous Workplace Chemicals - Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

2.6 ISO Publications

Copies of these documents are available online at www.iso.org/store.

ISO 9073-6 Textiles - Test Methods for Nonwovens - Part 6: Absorption

3. TECHNICAL REQUIREMENTS

Cloths shall be manufactured to meet all technical requirements of this specification.

3.1 Construction

Cloths shall be oriented into a planar assembly by woven, nonwoven, or knitted fabric production techniques.

3.2 Binder

Binding materials (binders), if used, shall be water insoluble.

3.3 Color

Cloths shall be white or off-white.

3.4 Cleanliness

Cloths shall be visibly clean and free of discoloration, except as occurs in natural fibers, and free of embedded particles, oils, greases, and other non-specification materials, determined in accordance with 4.7.3.

3.5 Workmanship

3.5.1 Cloths shall be virgin material (material that has never been used nor reclaimed for use).

3.5.2 Cloths shall be free of broken, starched, stiffened, or napped fibers and free of uneven, ragged, or frayed edges that result in excessive linting. Class 2 and Class 3 cloths may contain uneven edges created by the separation (i.e., perforation attachment points) of individual sheets from perforated rolls.

3.6 Shelf Life

Shelf life (Form 2 only) shall be a minimum of 12 months from the date of packaging when stored in the original, unopened containers at a temperature between 40 and 95 °F (4.4 and 35 °C).

3.7 Properties

Cloths shall conform to the following technical requirements:

3.7.1 Weight

Dry cloth weight for qualification tests shall be a minimum of 0.70 ounces per square yard (24 g/m²), determined in accordance with ASTM D3776 Option A. The cloth shall be weighed and measured in the configuration in which the sample is presented for cleaning use. See 4.4.2 for acceptance test weight requirements.

3.7.2 Water Absorption

When tested for water absorptive capacity per 4.7.4, Class 1, Class 2, and Class 3 cloths shall absorb not less than 400% of the dry cloth weight. Class 4 cloths shall absorb not less than 200% of the dry cloth weight.

3.7.3 Linting

Cloths shall lint not more than 10 mg/ft². For acceptance tests, linting shall be determined using the acceptance testing procedure described in 4.7.5 and 4.7.5.1 or the qualification testing procedure described in 4.7.5 and 4.7.5.2. For qualification tests, linting shall be determined using the qualification testing procedure described in 4.7.5 and 4.7.5.2.

3.7.4 Cloth Integrity

Specimens tested for linting properties as in 3.7.3 shall not tear on the screen of the U.S. Standard No. 40 sieve as a result of the 25 circumferential stroke linting test conducted in 4.7.5.

3.7.5 Fiber/Binder Integrity

Cloths shall leave no visible residue on the glass surfaces after testing in accordance with 4.7.6.

3.7.6 Extractable Matter

Cloths shall meet the requirements of Table 1, determined in accordance with 4.7.7.

Table 1 - Determination of extractable matter

Extractant Specification	Extractant Chemical Name	Extractable Matter % Maximum Grade A	Extractable Matter % Maximum Grade B
ASTM D1193, Type IV	Reagent Water	0.75	1.00
ASTM D1836	Hexane	0.75	1.00
ASTM D740	Methyl Ethyl Ketone	0.75	1.00

3.7.7 Silicone Greases and Oils

Cloths shall be free of silicone oils and residues, as determined in accordance with 4.7.8.

3.7.8 pH of Water Extract

The pH of the water extract shall be 6.0 to 8.0, as determined in accordance with 4.7.9.

3.7.9 Abrasion Resistance (Type 2 Only)

Substrates shall be free of streaks or hairline scratches generated by the rubbing motion of the cloth, as determined in accordance with 4.7.10.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification of Cloth

Qualification is the process by which material properties of a cloth are verified through testing at a certified laboratory prior to inclusion on a qualified products list (QPL). All cloth materials sold to this specification, including Form 2 cloths, shall be listed, or approved for listing, on an approved QPL in accordance with PD2000, OP 2007, and OP 2007 Appendix G9.

4.1.1 Qualified Products Lists

PRI QPL-AMS3819 is the approved QPL managed by the Performance Review Institute (PRI), 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616. Information pertaining to qualification of cloth may be obtained from PRI.

4.1.2 Contract Awards

Awards will be made only for cloths that are, prior to the award of contract, QPL approved.

4.2 Quality System of Supplier

Before submitting a cloth for qualification to this specification for the purpose of being listed on the QPL, the supplier shall have a quality system in place that meets the requirements of OP 2007 Appendix G9.

NOTE: The supplier may be the cloth manufacturer, a value-added distributor, or a pass-through distributor, as defined by OP 2007 Appendix G9.